

Exhibit 28

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Uniform Resource Identifiers (URI): Generic Syntax

Status of this Memo

This document specifies an Internet standards track protocol for the Internet community, and requests discussion and suggestions for improvements. Please refer to the current edition of the "Internet Official Protocol Standards" (STD 1) for the standardization state and status of this protocol. Distribution of this memo is unlimited.

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IESG Note

This paper describes a "superset" of operations that can be applied to URI. It consists of both a grammar and a description of basic functionality for URI. To understand what is a valid URI, both the grammar and the associated description have to be studied. Some of the functionality described is not applicable to all URI schemes, and some operations are only possible when certain media types are retrieved using the URI, regardless of the scheme used.

Abstract

A Uniform Resource Identifier (URI) is a compact string of characters for identifying an abstract or physical resource. This document defines the generic syntax of URI, including both absolute and relative forms, and guidelines for their use; it revises and replaces the generic definitions in RFC 1738 and RFC 1808.

This document defines a grammar that is a superset of all valid URI, such that an implementation can parse the common components of a URI reference without knowing the scheme-specific requirements of every possible identifier type. This document does not define a generative grammar for URI; that task will be performed by the individual specifications of each URI scheme.

The resource is the conceptual mapping to an entity or set of entities, not necessarily the entity which corresponds to that mapping at any particular instance in time. Thus, a resource can remain constant even when its content---the entities to which it currently corresponds---changes over time, provided that the conceptual mapping is not changed in the process.

Identifier

An identifier is an object that can act as a reference to something that has identity. In the case of URI, the object is a sequence of characters with a restricted syntax.

Having identified a resource, a system may perform a variety of operations on the resource, as might be characterized by such words as 'access', 'update', 'replace', or 'find attributes'.

1.2. URI, URL, and URN

A URI can be further classified as a locator, a name, or both. The term "Uniform Resource Locator" (URL) refers to the subset of URI that identify resources via a representation of their primary access mechanism (e.g., their network "location"), rather than identifying the resource by name or by some other attribute(s) of that resource. The term "Uniform Resource Name" (URN) refers to the subset of URI that are required to remain globally unique and persistent even when the resource ceases to exist or becomes unavailable.

The URI scheme (Section 3.1) defines the namespace of the URI, and thus may further restrict the syntax and semantics of identifiers using that scheme. This specification defines those elements of the URI syntax that are either required of all URI schemes or are common to many URI schemes. It thus defines the syntax and semantics that are needed to implement a scheme-independent parsing mechanism for URI references, such that the scheme-dependent handling of a URI can be postponed until the scheme-dependent semantics are needed. We use the term URL below when describing syntax or semantics that only apply to locators.

Although many URL schemes are named after protocols, this does not imply that the only way to access the URL's resource is via the named protocol. Gateways, proxies, caches, and name resolution services might be used to access some resources, independent of the protocol of their origin, and the resolution of some URL may require the use of more than one protocol (e.g., both DNS and HTTP are typically used to access an "http" URL's resource when it can't be found in a local cache).